

RE-POSITIONING REMINDER FOR CELLULAR PHONE

BACKGROUND OF THE INVENTION

A switch operated re-positioning reminder for a cellular phone is equipped with a time counter which can actuate an alarm device when a preset time is counted down. A magnet operated reed-in-tube switch is made up of a pair of partially overlapped but separated reeds in a tube, or other types of switches are used in the present invention. The time counter is a simple CPU contained program and a user can set up the prolonged time span as desired for the time counter. The alarm is a buzz, ring or speaker that can produce alarm sound. In the first embodiment, a PC board including the magnet operated reed-in-tube switch, the CPU, the buzz and a battery can be housed in a rather thin shelter case wherein a magnet is attached to a cellular phone or other expensive articles and the shelter case is fixed to the interior of a cellular phone case. In another embodiment, the magnet is fixed to a proper position of a cellular phone case, and the time counter program is merged with a conventional cellular phone circuit and the original ring system for the cellular phone is adopted as an alarm whereby as long as a cellular phone in either case is not repositioned in a cellular phone case in a pre-set time, the alarm device fixed in either the shelter case or the cellular phone will be actuated to alarm to remind a user not to leave his or her cellular phone behind.

Cellular phones have been regarded as the most important and influential personal communication equipment ever developed in the history of mankind. Men living in modern societies all over the world have enjoyed the convenience

brought by the cellular phones in daily life but they are always worried about loss of the cellular phones and other people might take advantage of their lost cellular phones and make illegal phone calls in one aspect and are afraid that some other people might even make use such illegally obtained cellular phones to conduct criminal acts, causing annoying and unnecessary troubles for them in another aspect.

Trying to solve such kind a problem, many prior art techniques have been developed and applied to such precious cellular phones, note books or golf bags to remind those absent-minded people not to leave their personal objects behind when they left a place. At present, the most popular reminder devices make use of a major and minor unit that are separately mounted to a person and to a personal article. As long as the major and minor units are separated away from each other at such a distance that the signals generated by one of the units can not be received by the other, an alarm sound will be produced. There are many disadvantages in such wireless electronic reminder devices to be overcome; for example, the bulky size of the device can not be minimized, the cost of production is relatively too high and the frequency interference can sometimes cause false operations or non-operations. The most problematic technique to be overcome is the power consumption; in real practice, a battery can only sustain several weeks in such wireless electronic reminder devices. It is not environment friendly and economic at all in practical use.

In use of the device of the present invention, for a male user, a thin magnet plate is attached to the back of a cellular phone and the other electronic parts are housed in a case that is fixed inside a cellular phone pocket. As the cellular phone is put into the cellular phone pocket, the magnet plate on the phone will make

the magnet operated reed-in-tube switch electrically connected and the electronic parts will not be actuated to work. When the cellular phone is taken out of the pocket, the magnetic force will disappear from the pocket, causing the reed-in-tube switch to be disconnected. Accordingly, the CPU of the reminder will be actuated to count down. In general, a phone call can be generally done in average in 3 minutes, so the CPU is set to function in 3 minutes. When the preset time is completely counted down, a reminding alarm is generated to remind a person to put the cellular phone back into the phone pocket to terminate the alarm sound. Thereby the cellular phone will not be placed randomly but only in the phone pocket to prevent the same from being lost.

SUMMARY OF THE INVENTION

Therefore, the primary object of the present invention is to provide a low cost and simply structured re-positioning reminder which can be mounted onto any precious personal articles so that when an article is not put back to its original position in a preset time, a buzzer or speaker will be actuated to send off alarm sound, reminding a person not to leave his or her personal article behind.

Another object of the present invention is to provide a re-positioning reminder whose main electric circuit can be alternatively set in the interior of a cellular phone with a strong magnet plate secured to the interior of a cellular phone pocket or case whereby once a precious article, such as a cellular phone, is separated from a cellular phone pocket and is set in a stand-by mode with the time in excess of a preset time, the CPU of the cellular phone will directly start

its original vibration alarm circuit to remind a person not to leave the cellular phone behind.

One further object of the present invention is to provide a re-positioning reminder wherein the delayed time of the counting program of the time counter can be adjusted by the CPU of the electric circuit according to the required operational conditions.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram showing the exploded components of the main circuit;

Fig. 2 is a diagram showing the front and rear shelter of the case;

Fig. 3 is a side view of an assembled case;

Fig. 4 is a perspective diagram showing the exploded components of the first embodiment of the present invention with the electronic components housed in the case;

Fig. 5 is a perspective diagram showing the same exploded components view from other direction;

Fig. 6 is a diagram showing a cellular phone with a magnet plate attached to the back thereof and the case of the first embodiment fixed to the inner surface of a cellular phone pocket;

Fig. 7 is a diagram showing a second embodiment of the present invention wherein the cellular phone pocket is equipped with a magnet plate on the inner surface and the circuit of the present invention directly implanted in the cellular phone circuit board;

Fig. 8 is a diagram showing a common charger mount with a magnet plate fixed at proper position on the charger;

Fig. 9 is a diagram showing the second embodiment of the present invention wherein the cellular phone is charged by a travel charging means having a socket-pin type plug in which a pair of pins are short circuited and as the multiple pinned plug is engaged in a socket of the cellular phone, the corresponding connection points of the socket will also be short circuited so as to make the cellular phone will not produce alarm sound to remind the user;

Fig. 10 is a diagram showing the second embodiment of the present invention wherein another travel charging means having a cylindrical plug is used; as the plug is engaged with the socket of the cellular phone, electrical power will be delivered to the socket, and at the same time, one set of mechanical contact points will be divided apart, the cellular phone will detect the input of electrical power or the breaking apart signal of the mechanical points can be detected so as to prevent the cellular phone from producing alarm sound;

Fig. 11 is a diagram showing the infrared transmission window of a cellular phone in the second embodiment is used to send a weak infrared signal in its stand-by status; as a piece of white paper is placed adjacent the window, the infrared will be reflected back to prevent the alarm unit of the repositioning reminder device of the cellular phone from working;

Fig. 12 is a diagram showing a circuit of the second embodiment wherein all the operation signals entering the CPU of the cellular phone are illustrated and indicated by A, B, C, D, E and F; as long as any one of the signals is input into the CPU, the repositioning reminder circuit of the cellular phone will be turned off not to produce alarm sound.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Fig, 1, the electronic device of the present invention is mainly to mount on a PC board 1 electrical components including a super power-saving, low voltage operated single chip CPU 2, which is equipped with a repositioning reminder program provided with a sleeping mode so as to make electrical power of the battery consumed in a more effective manner. Thus, the battery can last more than one year with each replacement. Moreover, on the PC board 1 are disposed a magnet-operated reed-in-tube switch 3 and a plurality of copper contact plates 4 and a plurality of resistors 5, capacitors 14 and a fundamental oscillator 6. As further shown in Figs. 2, 3, 4 and 5, the PC board 1 is placed at the center of a plastic front lid 11 of a shelter case 10. The bottom section of the plastic front lid 11 is provided with a resonance chamber 7 for the housing of a buzzer 8. The amplified sound from the resonance chamber 7 is sent out from an outlet hole 9. The upper section of the front lid 11 is provided with a lithium battery 15 whose positive terminal can be coupled to one of the copper contact plates 4 via a pivotal copper selection plate 13 on the PC board 1 for serving as a stage type selection switch, including 5 operation states, i.e., OFF, delay of 30 seconds, 1 minute, 3 minutes and 5 minutes respectively.

The rear cover 12 is made of aluminum alloy with its thickness only 0.3 mm so as to minimize the total thickness of the case. It can serve as the negative pole of the battery and also shield electromagnetic waves, preventing the CPU from out of function due to the abnormal influence of the electromagnetic waves.

As shown in Fig. 2 and Fig. 3, the assembly of the whole unit measures 7 cm in length, 2.5 cm in width and 0.3 cm in thickness. It is so small in size that it can be housed with the cellular phone 50 together in a general cellular phone pocket 60 as shown in Fig. 6 without making any variation of the equipment.

In the first embodiment, to the back of the cellular phone 50 is attached a magnet plate 70 and inside the cellular phone pocket 60 is fixed the case 10 in which all the above cited components are installed to make it functionally operable, as illustrated in Fig. 6. In practical use, when the cellular phone 50 is put inside the cellular phone pocket 60, the magnet operated reed-in-tube switch in the re-positioning reminder device will be activated by the magnet plate to connected and disconnected of its reed to get the reminder device turned on or off.

In a second embodiment of the present invention, the re-positioning reminder device is arranged in a wholly reverse manner but it works in a more effective way than the first embodiment.

In the second embodiment, almost no extra investment is required to make the production possible. In a newly designed or developed cellular phone 50, a time counter program is directly written or recorded into the CPU of the original cellular phone, and the power is supplied from the battery of the cellular phone 50. The alarm device adopts the vibration type alarm ring of the original cellular phone 50. The stepwise selection switch can be adapted to use the buttons of the keyboard and the only part to be mounted onto the cellular phone is the magnet actuated reed-in-tube switch.

Referring first to Fig. 7 and Fig.12, the thin magnet plate 70 attached to the back of the cellular phone 50 in the first embodiment is now secured to a proper

position in the interior of the cellular phone pocket 60 for a change. As the cellular phone 50 is placed inside the cellular phone pocket 60, the magnet actuated reed-in-tube switch in the cellular phone 50 is activated to turn on subject to the magnetic force of the magnet plate 70, the re-positioning reminder program is not in operation.

Once the cellular phone is taken out of the phone pocket 60, the magnet actuated reed-in-tube switch breaks apart to get the re-positioning reminder program functioning with a period of 10 seconds set up to get the cellular phone alarming if no dialing operation or function setting act is detected. So, a person can make use of the 10 seconds to start dialing a cellular phone or setting up functions on the cellular phone. Once the cellular phone 50 is in use, the program will stop time counting operation. After a phone call is terminated and the phone is in a standby mode, the re-positioning reminder program starts the time counting again. After 10 seconds, the alarm will be actuated if the cellular phone 50 is not put back to the phone pocket 60 in which the magnet plate inside the phone pocket 60 will stop the function of the re-positioning reminder program by way of its magnetic force to actuate the reed-in-tube switch. In such a manner, a cellular phone 50 will never be forgot or left behind after use.

Moreover, as shown in Fig. 11 and the part A of Fig. 12, the magnet actuated reed-in-tube switch cab be alternatively replaced by an infrared operated circuit switch 54 which can be planted inside the circuit board of a cellular phone. In this instance, a reflective device 62, such as a piece of white paper, placed inside the phone pocket 60 and positioned in alignment with the emitter of the infrared operated circuit switch 54 is employed to reflect the infrared signals back to a receiver of the infrared operated circuit switch 54. Thus, as the cellular phone 50

is put back into the phone pocket 60, the infrared signals issued by the infrared operated circuit switch 54 can be bounced back by the white reflective device 62, such as a piece of white paper. The reflected infrared signals can be used to automatically shut off the re-positioning reminder program inside of the cellular phone 50.

In order to advance the facility of use of the present invention in daily life, the inventor has made an analysis on all the causes of a cellular phone being taken out of a phone pocket in daily operations. Some people are used to nest their cellular phones in a phone cradle or seat. So, as a magnet plate 70 is placed at a proper position of the phone cradle or seat (not shown), the re-positioning reminder program of the cellular phone 50 can be shut off by the magnetic force when the cellular phone is put on such a cradle or seat. Furthermore, a magnet plate 70 can be also secured to a receiving box on a vehicle or on the table at your house so that the cellular phone 50 can be placed thereat to get the re-positioning reminder program of the cellular phone 50 turned off, as illustrated in the part B of Fig. 12.

Furthermore, as shown in Fig. 8, a magnet plate 70 can also be secured to such a proper position of a charger mount 80 that as the cellular phone 50 is put in the charger mount 80, the re-positioning reminder program will be shut off by the magnetic force as described in the previous examples.

Referring to the sections C and D of Fig. 12, as the buttons of the cellular phone 50 are being operated or the phone is in use, the alarm of the re-positioning reminder is not in function.

Referring to Figs. 9 and the section E of Fig. 12, if a traveler's cable type charger makes use of a socket-pin type plug 90 which is in connection to the

socket 51 of the cellular phone 50, there is a set of pins put in a short circuitry on the plug 90. Once the plug 90 is registered with the socket 51 of the cellular phone 50, the short circuited pins on the plug 90 will render a corresponding set of pins in short circuitry. Such a short circuitry signal will make the alarm system of the cellular phone 50 stop functioning accordingly. In such a manner, as the cellular phone 50 is in a charging mode, the re-positioning reminder device will not get alarmed.

As illustrated in Fig. 10, if the plug 53 of the traveler's cable type charger 52 is in a cylindrical shape, the mechanical break-off of a contact point in the socket 55 can be regarded as a signal or the power input of the external power supply can be adopted as a signal. In other words, as the cylindrical plug 53 of the cable type charger 52 is registered with the socket 55 of the cellular phone 50, a set of mechanical contact points will be parted off and the break-off will be treated as a signal so as to cause the alarm system of the cellular phone 50 to stop functioning.

In other way, as the power of the external power supply is inputting into the socket 55, the power input will serve as a signal to stop the re-positioning reminder program of the cellular phone 50 from time counting, resulting in the alarm system of the cellular phone 50 being shut off, as shown in Fig. 10 and the section F of Fig. 12.

However, by way of the re-positioning reminder of the present invention, a cellular phone can only be placed at the preset positions. If not, in excess of a preset period of time, the cellular phone 50 will produce alarm sound to remind the person not to leave his or her cellular phone behind without notice.

Moreover, the cellular phone can be housed in any kind of receiving means including a pocket of women's handbags or pockets of any clothes or garment in

which a magnet or an infrared reflection means is mounted to turn off or turn on said time counting delay program of said cellular phone and said alarm means.